

DRAFT APPENDIX 13 – Adaptive Management Requirements

Additional permit requirements in this appendix reflect approved adaptive management response plans in accordance with Special Condition S4.F.3. Affected Permittees shall comply with the specific requirements identified.

Name of Adaptive Management Response Plan	Lower Duwamish Waterway (LDW) Source Control
Reference Document(s)	<p><i>Seattle's Source Control Implementation Plan for the Lower Duwamish Waterway (2021-2026)</i>, City of Seattle 2020.</p> <p>https://www.seattle.gov/utilities/neighborhood-projects/lower-duwamish-waterway</p> <p><i>Lower Duwamish Waterway Source Control Strategy</i>, Publication No. 16-09-339, Ecology 2016.</p> <p>https://apps.ecology.wa.gov/cleanupsearch/document/56204</p> <p><i>Source Tracing in the Lower Duwamish Waterway, Quality Assurance Project Plan</i>, Prepared by Seattle Public Utilities, August 2018.</p>
Receiving Waterbody	Lower Duwamish Waterway in the Duwamish River estuary (from the southern tip of Harbor Island upriver approximately 5 river miles)
Applicable Area	Refer to Table 1 and Table 2 below.
Parameter(s)	<p>Metals: arsenic, copper, lead, mercury, zinc</p> <p>Total polychlorinated biphenyls (PCBs)</p> <p>Semi-volatile organic compounds (SVOCs) including phthalate esters and polycyclic aromatic hydrocarbons (PAHs)</p> <p>Total petroleum hydrocarbons (TPH)</p>
MS4 Permittee	Phase I Permit: City of Seattle

ACTIONS REQUIRED

Source Tracing & Sampling Program: The Permittee shall implement a Source Tracing & Sampling Program to find and eliminate priority contaminant sources to the MS4. The Permittee shall implement the schedules and activities identified in S5.C.7 and S5.C.8 of the Phase I permit in response to identified sources.

The source tracing sampling program shall result in the collection of storm solids, via grab sampling from catch basins or inline pipes and via sediment traps and associated chemical analyses. When applicable, source tracing sampling shall include resampling following line cleaning. If a previously unidentified discharge location owned or operated by the Permittee is found, source tracing sampling shall be performed at least once to fill data gaps. Where feasible and effective, source tracing may involve use of a canine trained in the identification of PCB sources.

The source tracing sampling program shall be implemented in accordance with an approved Quality Assurance Project Plan (QAPP). The existing QAPP dated August 2018 and referenced above is the current Ecology-approved QAPP. QAPP amendments, if necessary, must be submitted to Ecology for review and approval.

Effectiveness Monitoring Program: The Permittee shall implement an effectiveness monitoring program to track and evaluate contaminant concentration trends in MS4 discharges and to inform priorities for the implementation of Best Management Practices (BMPs) across the different MS4 drainage basins subject to this adaptive management response.

The effectiveness monitoring program shall result in the operation of routine monitoring locations to measure contaminant concentrations in storm solids at the outfalls (or near-end-of-pipes) subject to this adaptive management response as noted in Tables 1 and 2.

The effectiveness monitoring program shall be implemented in accordance with an approved Quality Assurance Project Plan (QAPP). The existing QAPP dated August 2018 and referenced above is the current Ecology-approved QAPP. QAPP amendments, if necessary, must be submitted to Ecology for review and approval.

At a minimum, the effectiveness monitoring program shall:

- Collect at least one sample per calendar year from each outfall/near-end-of-pipe location as noted “yes” for Effectiveness Monitoring Location in Tables 1 and 2 and per the Ecology-approved QAPP.
- Submit available effectiveness monitoring data to the Environmental Information Management (EIM) database by May 31 of each year.
- Be documented in a QAPP consistent with *Guidelines for Preparing Quality Assurance Project Plans for Environmental Studies*, July 2004, Ecology Publication No. 04-03-030.

Operations & Maintenance:

1. The Permittee shall implement a Line Cleaning Program in the area subject to this adaptive management response. The purpose of the Line Cleaning Program is to remove storm solids that have accumulated in the conveyance system, assess pipe condition, and provide a “clean slate” for source tracing. The Permittee shall prioritize conveyance lines for cleaning on an annual basis based on source tracing data, effectiveness monitoring data, and other considerations. The Permittee shall clean, on average, 4,000 linear feet each calendar year.
2. The Permittee shall continue to implement the following stormwater management operations and maintenance actions in the S. Myrtle Street basin until such time as this basin is identified as no longer a priority in accordance with the Annual Prioritization (described below):
 - a. Weekly sweeping of S. Myrtle Street from 8th westward to street end. Compliance with this requirement shall be determined by the presence of an established program designed to conduct weekly sweeping and achieving at least 95% of the required weeks. This street sweeping effort cannot be counted towards compliance with other permit requirements pertaining to street sweeping across the MS4 coverage area (S5.C.7 and S5.C.10).
 - b. Quarterly maintenance inspection of S. Myrtle Street catch basins.

Structural Controls: The Permittee shall include in each Annual Report the following information associated with approved Integrated Plan projects.

1. South Park Water Quality Stormwater Treatment Facility: Submit a status report documenting progress on capital stormwater infrastructure project planning and implementation designed to achieve stormwater pollutant load reduction targets identified in the Integrated Plan.
2. Street Sweeping Expansion-Arterials: Provide the following details for the MS4 drainage basins subject to this adaptive management response: routes swept, road miles swept, frequency of sweeping, and any problems encountered that would hinder the effectiveness of this BMP in the LDW.

Annual Prioritization and Reporting: In addition to the annual reporting required under S4.F.3.d, the Permittee shall provide an assessment of priorities (planned actions and target locations) for the following year. This annual prioritization update shall affirm previous priorities or identify and justify changed priorities. Analytical results from effectiveness monitoring, together with figures showing the locations of the samples, will be presented to inform the annual prioritization of program activities across the area subject to this adaptive management response. Results from source tracing sampling may also be used to inform annual prioritization, however such data is not appropriate for assessment of trends over time (e.g., effectiveness monitoring reporting) and data should not be comingled in the effectiveness monitoring evaluation. This information shall be provided with each annual report except for the annual report due March 31, 2025. Refer to the Source Control Implementation Plan Update requirement, below, for information about the required report due March 31, 2025.

Source Control Implementation Plan Update: No later than March 31, 2025, the Permittee shall submit for Ecology's approval a draft revised Source Control Implementation Plan (SCIP) covering the 2027-2032 time period. The draft revised SCIP must build upon the 2021-2026 SCIP, provide an updated assessment of source tracing and program effectiveness data, identify planned operations, maintenance, and capital projects to address Duwamish source control needs.

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Table 1: Seattle-Owned Applicable Outfalls

Storm Drain (SD) Outfall Name	Separated Stormwater Drainage Basin Area (acres)	Outfall Diameter (inches)	Effectiveness Monitoring Location
<i>East side of waterway</i>			
S Nevada St	23	18	
Diagonal Ave S ^a	2,664	144	Yes
S River St	6.5	8	Yes
S Brighton St	17	30	Yes
S Myrtle St	6.2	30	Yes
Georgetown	5.9	24	Yes
<i>West side of waterway</i>			
SW Dakota St	54 ^c	30	Yes
SW Idaho St	423	72	Yes
SW Kenny St ^b	154	48	Yes
Highland Parkway SW	289 ^d	72	Yes
S Webster St	e	6	
7th Ave S	238	72	Yes
17 th Ave S	2.9	18	Yes
Duwamish substation #1	0.6	8	
Duwamish substation #2	1.3	8	
Duwamish substation #3	1.9	8	
South Operations Center	6.07	30	

Note: outfalls are listed in order from downstream end of waterway to upstream end of waterway starting with outfalls located on the east side followed by those on the west side of the waterway.

- a. SPU's CSO #111 and King County's Hanford #1 CSO also discharge to this outfall.
- b. King County's T115 CSO discharges to this outfall (100 acres)
- c. 44.8 acres drains to the Seattle-owned SW Dakota St SD system. An additional 9 acres drains to the constructed channel that discharges to the LDW downstream (i.e., east) of Seattle's outfall.
- d. Does not include the approximately 7.3 acre overlap within the 1st Ave S drainage basin.
- e. A single catch basin in S Riverside Dr is connected to this outfall.

Table 2: Applicable Outfalls Owned Or Installed By Others To Which Seattle Ms4 Discharges

Storm Drain (SD) Outfall Location	Owned or Installed by	Separated Stormwater Drainage Basin Area (acres)	Outfall Diameter (inches)	Effectiveness Monitoring Location
<i>East side of waterway</i>				
Head of Slip 2	Private	12	24	
S Garden St ^a	Private	12	30	
I5 SD at Slip 4	WSDOT	150 ^d	72	Yes
16th Ave S (East)	Tukwila	12	12	
KCIA #1	King County	192 ^e	30	
S Norfolk St ^b	Tukwila	676	84	Yes
I5 SD at S Ryan St ^c	WSDOT	617	60	
1st Ave S (East)	WSDOT	15	36	Yes
<i>West side of waterway</i>				
1st Ave S (West)	WSDOT	603	Open channel	Yes
2nd Ave S	Private	38	24	
S 96th St	Unknown	1,050 ^f	72	
W Marginal Pl SW	Unknown	4.6 ^g	36	
16 th Ave S (West)	King County	2	Open channel	

Note: outfalls are listed in order from downstream end of waterway to upstream end of waterway starting with outfalls located on the east side followed by those on the west side of the waterway.

- a. Outfall ownership transferred to Seattle Iron and Metals Company in 2012. Seattle MS4 contributes 1 of the 12 acres in this drainage basin. The sampling point is representative of all contributions to the basin in order to support the LDW source control program.
- b. King County's S. Norfolk CSO discharges to this outfall.
- c. Seattle installed a high flow bypass to the S Ryan St system in 1992, to divert excess stormwater flow from the S Norfolk St drainage system to prevent flooding during large storm events.
- d. Approximately 65 acres are served by Seattle-owned storm drains. The remainder is I-5 and railroad right-of-way drainage.
- e. Approximately 86 acres are served by Seattle-owned storm drains. The remainder is I-5 right-of-way and King County Airport property.
- f. Approximately 83 acres are served by Seattle-owned storm drains. The remainder is in unincorporated King County.
- g. Seattle-owned drainage only.